

UNITED STATES PATENT OFFICE.

THEODORE DAVIS, OF BIRMINGHAM, ALABAMA, ASSIGNOR TO STANDARD FUEL COMPANY, OF MONTGOMERY, ALABAMA, A CORPORATION OF ALABAMA.

CARBONACEOUS BRIQUET.

966,804.

Specification of Letters Patent.

Patented Aug. 9, 1910.

No Drawing.

Application filed August 16, 1907. Serial No. 388,927.

To all whom it may concern:

Be it known that I, THEODORE DAVIS, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Carbonaceous Briquets, of which the following is a specification.

The object of my invention is to produce a fuel briquet having the properties of anthracite coal, from coke and soft coal which latter term includes the bituminous and semi-bituminous coals and the higher grades of lignites, a binder such as that forming the subject matter of a companion application Serial No. 387,632 filed the 8th day of August, 1907, being mixed with the coal and coke to bind the same in briquet form when compressed.

Both anthracite and bituminous coal have heretofore been briquetted with more or less success dependent upon the nature of the binder employed, but in each case the resultant briquets have been inferior to the lump coal and commanded a lesser price. Coke breeze also has been briquetted with more or less success. I have conceived that if a briquet, substantially equal in quality to a high grade coal such as anthracite lump coal, can be produced from such cheap stock as soft coal or slack and coke or coke breeze, that a new composition fuel will be produced of great value in that it offers a profitable basis for the utilization of vast quantities of combustible material much of which now practically goes to waste. The coke furnishes the high carbon base to the briquet which will cause it to burn slowly but with intense heat and smokeless combustion. The addition of soft coal or slack to the coke, renders the briquet more readily ignitable and in many cases causes a change in the character of the briquet as it burns by reason of the fact that as the small percentage of coal exposed in the outer surface of the briquet is consumed, it serves to practically coke all of the remaining soft coal in the interior of the briquet so that, while burning more freely than a briquet made entirely from coke, it yet possesses substantially the same characteristics as hard coal. It will be apparent however, that the success of such a composition fuel depends largely upon the provision of a binder which

will hold the briquets against disintegration in the fire for the coking process and the free burning quality is largely dependent upon the briquet retaining its shape during combustion. I prefer to use the binder disclosed in my above mentioned application which has thoroughly demonstrated its ability to hold the composition coal and coke briquets against disintegration until completely consumed. Obviously, however, other binders may be used with more or less success in briquetting the coal and coke to produce the novel fuel forming the subject matter of my present invention.

I have obtained the best results by a mixture of coal and coke in the proportions of from thirty to fifty per cent. of coal to the balance of coke, the percentage of coal varying in accordance with the character of the fuel desired. For instance, where it is desired to produce a briquet for burning in open grates or under light draft conditions, it is necessary to increase the percentage of soft coal so that the briquets will ignite readily and burn freely. Highly successful briquets for this particular purpose have been manufactured from coal and coke in equal proportions though the proportion of coal may be slightly increased up to the point where the briquet tends to assume more the character of soft coal. Where the briquet is to be used under high draft conditions, the percentage of coal may be reduced to about thirty per cent., successful experiments having been conducted with briquets having sixty-five per cent. of coke and thirty-five per cent. of coal.

The object of my invention being to produce a briquet which will have the characteristics of hard or anthracite coal, it follows that the proportion of soft coal used will not be so great relatively to the coke as to prevent the combination briquet coking readily in the fire. To this end the proportion of soft coal should be substantially fifty per cent. or less and at the same time, since a coke briquet would be different in cost and result from the fuel contemplated in my invention, I find it necessary to use in excess of thirty per cent. of soft coal to secure the coking action and produce a fuel having the burning qualities desired at a low cost. Between the percentages of thirty

and fifty per cent. of soft coal, the quantity added is governed by the particular use for which the fuel is intended and may also be influenced by the cost of the materials going into the manufacture of the briquet but the new fuel which I have produced has proven most highly successful within the limits above prescribed.

As my preferred binder for the briquets I provide a soapy water solution by dissolving about one-eighth ounce of sal soda in five gallons of water and adding to the latter when heated about one-eighth pint of linseed or other oil which will dry quickly in the briquet for the purpose of water proofing the latter. The sal soda causes the oil and water to thoroughly mix and into the above quantity of soapy water I dissolve about one pound of an adhesive, preferably dextrin, adding if desirable one-eighth pound of gelatin or ground glue, one-eighth ounce of sal soda, and after the above constituents have become dissolved, adding about one-eighth ounce of formaldehyde. This binder, which forms the subject matter of my said pending application aforesaid, and which is not separately claimed herein can be used hot or cold and can be successfully mixed with the briqueting material in the proportion of about eight gallons of binder to the ton. The resultant briquets are water proof and will dry quickly, harden with age and burn without any effect from

the binder except to hold the briquets against disintegration until thoroughly consumed. 35

Having thus described the preferred manner of producing my novel fuel, what I claim as new and desire to secure by Letters Patent, is:—

1. A fuel briquet consisting of soft coal mixed in the proportion of from thirty to fifty per cent. of the whole with coke breeze, to which mixture is added a binder comprising a soapy water solution as a base in which an adhesive has been dissolved. 45

2. A fuel briquet in which from thirty to fifty per cent. of bituminous coal is added to from fifty to seventy per cent. of coke breeze and the resultant mass mixed with a binder formed of the following elements in substantially the following proportions, to-wit: for each ton of said mixture five quarts of water, one-eighth ounce of sal soda dissolved in said water when warm, one-eighth pint of linseed or similar oil that will dry quickly in the briquet, one pound of dextrin, one-eighth ounce of sal soda, one-eighth pound of gelatin or ground glue and one-eighth of an ounce of formaldehyde. 55

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 60

THEODORE DAVIS.

Witnesses:

H. OSBORNE,
NOMIE WELSH.